a1

--44. The light modulating apparatus according to claim 43, wherein the light-modulating apparatus comprises a cholesteric display having a temperature independent reflective wavelength.--

REMARKS

Claims 18-44 are pending in the application as a result of the instant Amendment. It is respectfully submitted that claims 1-17 were cancelled in favor of claims 18-44 to put the claims into the form preferred in U.S. practice; the new claims do not add new matter to the instant application.

It is respectfully submitted that the Preliminary Amendment places the above-identified application in better condition for initial examination.

A clean copy of claims 18-44 is provided in the attached Appendix.

If any points remain in issue which the Examiner feels may best be resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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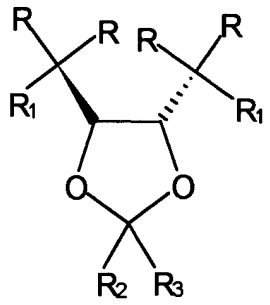
Date: September 24, 2001

Attorney Docket No.: KD-01-004US

APPENDIX

18. An optically active compound of the formula:

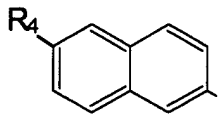


where the R_2 and R_3 groups are methyl, another lower alkyl group or an aryl or biaryl unit while the R_1 groups independently each are a hydroxyl, alkoxyl, aryloxy, or arylalkoxy group, the R groups each represent a group as follows:

$$A_1 —[—Z—]_q —A_2—$$

where A_1 is an aromatic group, an acyclic aliphatic group, or an alicyclic group, and A_1 can be a substituted or unsubstituted group, Z is a group selected from -O-, -OCO-, or -S-, and the coefficient q is 0 or 1. Z may also be $(CH_2)_nO$ where the coefficient n is 0 to 5 and the coefficient q is 1. A_2 is a bivalent radical of a naphthalene group, and the cyclic structure of A_2, or A_1 if it is cyclic, optionally can be heterocyclic, such as by replacement of one or more CH member(s) of the ring structure with N, O and/or S.

19. The optically active compound of claim 18, where each R substituent is independently selected as:



where R_4 represents a group as follows:

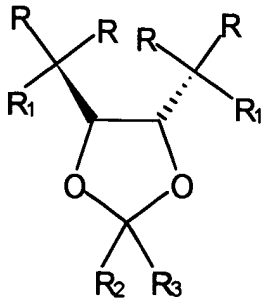
$$Y—[—X—]_n—[—Z—]_q—$$

where n is an integer value of 0 or 1 or more, X is -CH=CH-CH_2-, or -$(CH_2)_m$- where m is an integer value of 1, 2, 3, or more, Y is a radical of an aromatic hydrocarbon, an acyclic aliphatic hydrocarbon, or an alicyclic hydrocarbon, and Y can be a substituted or unsubstituted group, and Z and q have the same respective meanings as defined in claim 18.

20. The optically active compound of claim 19, where R_4 is an aryloxy radical, an arylalkoxy radical, an arylalkyleneoxy, or an arylalkenyleneoxy radical.

21. (4R,5R)-2,2-dimethyl-α,α,α',α'-tetrakis[6-(benzyloxy)naphth-2-yl]-1,3-dioxolane-4,5-dimethanol.

22. A liquid crystalline mixture, comprising:
a liquid-crystalline base having liquid crystalline properties;
at least one optically active compound of the formula:

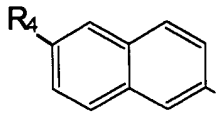


where the R_2 and R_3 groups are methyl, another lower alkyl group or an aryl or biaryl unit while the R_1 groups independently each are a hydroxyl, alkoxyl, aryloxy, or arylalkoxy group, the R groups each represent a group as follows:

$$A_1—[—Z—]_q—A_2—$$

where A_1 is an aromatic group, an acyclic aliphatic group, or an alicyclic group, and A_1 can be a substituted or unsubstituted group, Z is a group selected from -O-, -OCO-, or -S-, and the coefficient q is 0 or 1. Z may also be $(CH_2)_nO$ where the coefficient n is 0 to 5 and the coefficient q is 1. A_2 is a bivalent radical of a naphthalene group, and the cyclic structure of A_2, or A_1 if it is cyclic, optionally can be heterocyclic, such as by replacement of one or more CH member(s) of the ring structure with N, O and/or S.

23. The liquid crystalline mixture of claim 22, where each R substituent is independently selected as:



where R_4 represents a group as follows:

$$Y—[—X—]_n—[—Z—]_q—$$

where n is an integer value of 0 or 1 or more, X is -CH=CH-CH_2-, or -$(CH_2)_m$- where m is an integer value of 1, 2, 3, or more, Y is a radical of an aromatic hydrocarbon, an acyclic aliphatic hydrocarbon, or an alicyclic hydrocarbon, and Y can be a substituted or unsubstituted group, and Z and q have the same respective meanings as defined in claim 18.

24. The liquid crystalline mixture of claim 23, where R_4 is an aryloxy radical, an arylalkoxy radical, an arylalkyleneoxy, or an arylalkenyleneoxy radical.

25. The liquid crystalline mixture according to claim 22, further including an achiral non-liquid crystalline compound.

26. The liquid crystalline mixture according to claim 25, wherein the achiral non-liquid crystalline compound comprises R^1 -C≡N, where R^1 represents an aliphatic group.

27. The liquid crystalline mixture according to claim 26, wherein R^1-C≡N comprises an alkylnitrile.

28. The liquid crystalline mixture according to claim 26, wherein R^1-C≡N comprises undecanenitrile.

29. A liquid crystalline mixture, comprising:

a liquid-crystalline base having liquid crystalline properties;

at least one optically active compound of the formula (4R,5R)-2,2-dimethyl-α,α,α',α'-tetrakis[6-(benzyloxy)naphth-2-yl]-1,3-dioxolane-4,5-dimethanol.

30. The liquid crystalline mixture according to claim 29, further including an achiral non-liquid crystalline compound.

31. The liquid crystalline mixture according to claim 30, wherein the achiral non-liquid crystalline compound comprises R^1 -C≡N, where R^1 represents an aliphatic group.

32. The liquid crystalline mixture according to claim 31, wherein R^1-C≡N comprises an

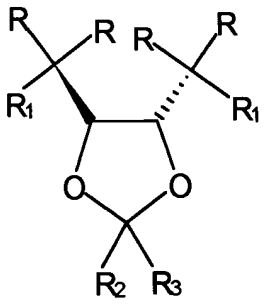
alkylnitrile.

33. The liquid crystalline mixture according to claim 31, wherein R^1-C≡N comprises undecanenitrile.

34. An electro-optical cell comprising a layer including a liquid crystalline mixture sandwiched between two substrate means, and means for applying an electric potential to the substrate means, wherein the liquid crystalline mixture comprises:

a liquid-crystalline base having liquid crystalline properties;

at least one optically active compound of the formula:



where the R_2 and R_3 groups are methyl, another lower alkyl group or an aryl or biaryl unit while the R_1 groups independently each are a hydroxyl, alkoxyl, aryloxy, or arylalkoxy group, the R groups each represent a group as follows:

$$A_1—[—Z—]_q—A_2—$$

where A_1 is an aromatic group, an acyclic aliphatic group, or an alicyclic group, and A_1 can be a substituted or unsubstituted group, Z is a group selected from -O-, -OCO-, or -S-, and the coefficient q is 0 or 1. Z may also be $(CH_2)_nO$ where the coefficient n is 0 to 5 and the coefficient q is 1. A_2 is a bivalent radical of a naphthalene group, and the cyclic structure of A_2, or A_1 if it is cyclic, optionally can be heterocyclic, such as by replacement of one or more CH member(s) of the ring structure with

N, O and/or S.

35. A light modulating apparatus comprising an electro-optical cell according to claim 34.

36. The light modulating apparatus according to claim 35, wherein the light modulating apparatus comprises a cholesteric display.

37. An electro-optical cell comprising a layer including a liquid crystalline mixture sandwiched between two substrate means, and means for applying an electric potential to the substrate means, wherein the liquid crystalline mixture, comprises:

a liquid-crystalline base having liquid crystalline properties;

at least one optically active compound of the formula (4R,5R)-2,2-dimethyl-α,α,α',α'-tetrakis[6-(benzyloxy)naphth-2-yl]-1,3-dioxolane-4,5-dimethanol.

38. A light modulating apparatus comprising an electro-optical cell according to claim 37.

39. The light modulating apparatus according to claim 38, wherein the light modulating apparatus comprises a cholesteric display.

40. An electro-optical cell comprising:

a layer comprising:

at least 70 weight percent (wt%) nematic host mixture; and

at least about 2 wt% (4R,5R)-2,2-dimethyl-α,α,α',α'-tetrakis[6-(benzyloxy)naphth-2-yl]-1,3-dioxolane-4,5-dimethanol;

first and second substrates disposed above and below, respectively, the layer; and

first and second conductors physically coupled to the first and second substrates, respectively, which permit an electrical potential to be applied across the layer.

41. The electro-optical cell as recited in claim 40, wherein the layer further comprises about 2-6 wt% achiral material.

42. The electro-optical cell as recited in claim 40, wherein the layer further comprises a chiral material different from (4R,5R)-2,2-dimethyl-α,α,α',α'-tetrakis[6-(benzyloxy)naphth-2-yl]-1,3-dioxolane-4,5-dimethanol and having an opposite twist sense.

43. A light modulating apparatus comprising an electro-optical cell according to claims 40.

44. The light modulating apparatus according to claim 43, wherein the light-modulating apparatus comprises a cholesteric display having a temperature independent reflective wavelength.